

## **REMARKS**

The specification has been amended to correct two typographical errors.

Regarding the restriction requirement of the Office Action, Applicant respectfully submits that the restriction requirement is improper, given the following:

The Office Action asserts that the present application contains claims directed to three patentably distinct species of the claimed invention, namely Species I, described in the specification, page 6, lines 5-10, Species II, described in the specification, page 7, and Species III, described by Figure 3. Applicant respectfully disagrees.

In the specification beginning on page 10, line 9, an embodiment is described wherein “an estimation of N Gaussian pulse parameters may be determined for at least one Gaussian pulse comprised in the signal” (step 204), after which, “a plurality of permutations of the estimated Gaussian Pulse parameters may be generated” (step 206). The received signal, the estimation, and the permutations are used to characterize the Gaussian pulse. The Office Action asserts that this method of detecting Gaussian pulses characterizes Species I, and that Species I is patentably distinct from Species II and Species III, as described in the Office Action.

Applicant respectfully submits that the characterized species described in the Office Action are not in fact proper species. As recited in MPEP 806.04(e),

“Claims are definitions of inventions. Claims are never species. Claims may be restricted to a single disclosed embodiment (i.e., a single species, and thus be designated a specific species claim), or a claim may include two or more of the disclosed embodiments within the breadth and scope of definition (and thus be designated a generic or genus claim).”

And, as further recited in 806.04(f),

“Claims to be restricted to different species must be mutually exclusive. The general test as to when claims are restricted, respectively, to different species is the fact that one claim recites limitations which under the disclosure are found in a first species but not in a second, while a second claim recites limitations

disclosed only for the second species and not the first. This is frequently expressed by saying that claims to be restricted to different species must recite the mutually exclusive characteristics of such species.”

In other words, each species disclosed in the specification must include features that are mutually exclusive with respect to features of the other species.

Applicant notes that the embodiment characterized as Species I in the Office Action is disclosed in the description of Figure 2, page 10, line 9 – page 14, line 19. Applicant further notes that the embodiment characterized as Species III in the Office Action is disclosed in the (amended) description of Figure 3, page 14, line 21 – page 18, line 2. More specifically, amended page 14, lines 22-24, state that “Figure 3 is a flowchart of one embodiment of a method for making the estimation of parameters for the Gaussian pulse comprised in the received digital signal, as described above in 204 with reference to Figure 2.” Thus, as disclosed in the specification, the method of Figure 3 is presented as a specific embodiment of the estimation step in the method of Figure 2. Applicant thus submits that the embodiment of Figure 2 is generic to that of Figure 3.

Applicant further notes that claim 89, which includes the limitation “performing a windowed Fast Fourier Transform (FFT)”, is dependent from claim 77, which includes the limitation “generating a plurality of permutations of the coarse estimate set of parameters”. Thus, claim 77 is generic to claim 89.

Regarding Species II as characterized by the Office Action, as stated in the amended specification, page 17, lines 20-28, “in one embodiment, the method described above with reference to Figures 2 and 3 may be applied iteratively to a signal containing multiple Gaussian pulses, such as may be produced by the TDR system of Figure 1. Such a method is described below with reference to Figure 4. In this embodiment, each time a pulse is detected and characterized, the characterized pulse may be subtracted from the signal, leaving a residue containing any remaining pulses. This residue may then be used as the input signal, and the next pulse detected and characterized. Again, the characterized pulse may be subtracted from the signal, leaving another residual signal, and so on, until all pulses of interested have been detected and characterized.”

Thus, as disclosed in the specification, the method of Figure 4 is presented as a specific embodiment of the method of Figure 2 and Figure 3. Applicant thus submits that the embodiments of Figure 2 and Figure 3 are generic to or read upon that of Figure 4.

Thus, based on the specification and the claims, the features that the Office Action has characterized as belonging to different species are clearly not mutually exclusive, in that various embodiments of the disclosed invention may include any or all of these features.

Thus, for at least these reasons, Applicant submits that the restriction requirement related to Species I, Species II, and Species III, as characterized by the Office Action, is improper.

For at least the reasons provided above, Applicant respectfully requests removal of the restriction requirement.

## CONCLUSION

In light of the foregoing amendments and remarks, Applicants submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any fees are due, the Commissioner is authorized to charge said fees to Conley, Rose, & Tayon, P.C. Deposit Account No. 501505/5150-55200/JCH.

Respectfully submitted,



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